LISTING OF CLAIMS:

1 - 24. (Cancelled)

25. (Previously Presented) A system for power injection of fluids into a patient, comprising:

a catheter configured to withstand fluid pressures at or below a first threshold pressure;

a valve housing connected to the catheter, the valve housing comprising:

an inlet;

an outlet; and

a slitted flow control membrane disposed between the inlet and the outlet;

a bypass element sized to fit within the inlet of the valve housing and through a slit of the flow control membrane; and

an overpressure control device connected to the bypass element, the overpressure control device adapted to maintain a fluid pressure below a second threshold pressure, wherein the second threshold pressure is less than or equal to the first threshold pressure.

26. (Previously Presented) The system of claim 25, wherein the edges of a slit of the flow control membrane can separate by a maximum distance without damaging the membrane, the bypass element further comprising:

a tip with an outer diameter less than or equal to said maximum distance.

27. (Previously Presented) The system of claim 25, the bypass element further comprising:

a rounded tip.

28. (Previously Presented) The system of claim 25, wherein the overpressure control device includes a spring-loaded pressure relief valve designed to open in response to fluid pressures above the second threshold pressure.

29. (Previously Presented) The system of claim 25, wherein the overpressure control device includes a controlled failure element designed to burst when acted on by a fluid pressure greater than or equal to the second threshold pressure.

30. (Previously Presented) The system of claim 29, wherein the controlled failure element is disposed within a fluid capture jacket.

31. (Previously Presented) The system of claim 25, wherein the catheter is sized 3 French, the first threshold pressure is approximately 125 PSI, the second threshold pressure is less than 125 PSI, and the bypass element is characterized by an inner diameter selected to limit the flow through the system to less than approximately 0.56 mL/second.

32. (Previously Presented) The system of claim 25, wherein the catheter is sized 7 French, the first threshold pressure is approximately 330 PSI, the second threshold is less than 330 PSI, and the bypass element is characterized by an inner diameter selected to limit the flow through the system to less than approximately 8.78 mL/second.

33. (Previously Presented) The system of claim 25, wherein each of the catheter, the valve

housing, the bypass element, and the overpressure control device has proximal and distal ends, the distal end of the catheter is insertable into a patient, the proximal end of the catheter is in fluid communication with the distal end of the valve housing, the inlet is disposed at the proximal end of the valve housing, the distal end of the bypass element is insertable into the inlet and through a slit in the slitted flow control membrane, and the proximal end of the bypass element is in fluid communication with the distal end of the overpressure control device.